Claim Amendments

Claim 1 (currently amended): An apparatus for determining a bidirectional reflectance distribution function of a subject comprising:

a <u>structured</u> light source for producing light;

sensing means for sensing the light;

means for focusing the light between the light source and the sensing means and the subject; and

a computer connected to the sensing means for measuring the bidirectional reflectance distribution function of the subject from the light sensed by the sensing means.

Claim 2 (currently amended): An apparatus as described in Claim [[1]] <u>8</u> wherein the sensing means includes a light absorbing wall which absorbs unwanted light from the light source.

Claim 3 (original): An apparatus as described in Claim 2 wherein the focusing means includes a hollow tube lined with mirrors through which light from light source passes, reflecting zero or more times off of the mirrors.

Claim 4 (original): An apparatus as described in Claim 3 wherein the sensing means includes an image sensing device for sensing light of the subject that has passed through the focusing means.

Claim 5 (original): An apparatus as described in Claim 4 wherein the focusing means includes a half silvered mirror which directs light from the light source to the hollow tube and light from the hollow tube to the image sensing device.

Claim 6 (original): An apparatus as described in Claim 5 wherein the focusing means includes a magnifying lens system for directing the light to the hollow tube.

Claim 7 (currently amended): An apparatus as described in Claim [[6]] 1 wherein the light source includes an array of LEDs.

Claim 8 (original): An apparatus as described in Claim 7 wherein the computer causes the lights in the LED array to turn on in sequence, with light from each LED taking a sub-measurement of the bidirectional reflectance distribution function.

Claim 9 (currently amended): An apparatus as described in Claim [[8]] 6 wherein the imaging sensing device includes a CCD camera.

Claim 10 (original): An apparatus as described in Claim 9 wherein the tube has a square profile.

Claim 11 (original): An apparatus as described in Claim 3 wherein the hollow tube has slanted walls.

Claim 12 (original): An apparatus as described in Claim 3 wherein the tube has a profile that is larger at its top end and is smaller at the bottom end.

Claim 13 (original): A method for determining a bidirectional reflectance distribution function of a subject comprising the steps of:

placing an optically hollow structure against the subject;

producing light;

reflecting the light at various angles from the subject through the hollow structure; and

measuring the bidirectional reflectance distribution function from the reflected light.

Claim 14 (original): A method as described in Claim 13 wherein the producing step includes the step of triggering light sequentially from each LED from an array of LEDs, the computer in communication with the LEDs.

Claim 15 (original): A method as described in Claim 14 wherein the reflecting step includes the step reflecting light off of mirrors in the hollow structure.

Claim 16 (original): A method as described in Claim 15 wherein the reflecting step includes the step reflecting the light from a half silvered mirror to the hollow structure.

Claim 17 (original): A method as described in Claim 16 wherein the reflecting step includes the step of imaging light from the LEDs with a magnifying lens system onto the surface through the hollow structure.

Claim 18 (original): A method as described in Claim 17 wherein the reflecting step includes the step of reflecting light off of the first wall of a hollow structure.

Claim 19 (original): A method as described in Claim 18 wherein the reflecting step includes the steps of reflecting light off a right wall of the hollow structure, reflecting the light off a left wall of the structure, striking the surface with a light, reflecting light off the left wall, reflecting the light off the right wall, passing the light through the lens, traveling the light through the half-silvered mirror, and impinging the light on the CCD camera.

Claim 20 (currently amended): An apparatus for determining a bidirectional reflectance distribution function of a subject comprising:

a structured light source for producing light;

only one CCD camera for sensing the light;

means for focusing the light between the light source and the sensing means and the subject; and

a computer connected to the CCD camera for measuring the bidirectional reflectance distribution function of the subject from the light sensed by the sensing means.

Claim 21 (currently amended): An apparatus for determining a bidirectional reflectance distribution function of a subject comprising:

a structured light source for producing light;

means for taking sub-measurements of the subject with light from the light source without any physical movement between sub-measurements; and

a computer connected to the taking means for measuring the bidirectional reflectance distribution function of the subject from the light sensed by the taking means.

Claim 22 (new): An apparatus as described in Claim 21 wherein the light source includes an array of LEDs.

Claim 23 (new): An apparatus as described in Claim 22 wherein the computer

causes the lights in the LED array to turn on in sequence, with light from each LED taking a

sub-measurement of the bidirectional reflectance distribution function.

Claim 24 (new): An apparatus as described in Claim 20 wherein the light

source includes an array of LEDs.

Claim 25 (new): An apparatus as described in Claim 24 wherein the computer

causes the lights in the LED array to turn on in sequence, with light from each LED taking a

sub-measurement of the bidirectional reflectance distribution function.